

Abstract of the Disclosure

A proton exchange membrane fuel cell and a direct methanol fuel cell pack using a monopolar electrode are provided. The fuel cell pack includes a plurality of cells each having a membrane in its middle and a cathode and an anode at both sides of the membrane, collector plates contacting the cathode and the anode, respectively, in each cell, and an electrical connection member for electrically connecting adjacent cells. The cells are evenly disposed on an arbitrary plane with a hollow interposed between two adjacent cells. The electrical connection member is positioned in the hollow. The fuel cell pack also includes a porous fuel diffusion member contacting the anode of each cell; a porous air contact member contacting the cathode of each cell; an anode end plate and a cathode end plate disposed at the side of the anodes of the cells and at the side of the cathodes of the cells, respectively, for protecting the cells; a fuel supply and discharge unit for supplying fuel toward the anodes in the hollow and discharging the fuel; a fuel flow stopper disposed at a portion at the part of the cathodes in the hollow, for preventing fuel flowing at a portion at the part of the anodes in the hollow from flowing toward the portion at the part of the cathodes in the hollow; and a sealing member for sealing the anodes of the cells and the portion of the hollow corresponding to the anodes. Accordingly, circulation of fuel for the plurality of cells is performed through a single inlet and a single outlet so that a fuel supply line is very simple compared to a structure of a fuel supply line for each cell in a conventional cell pack having a structural limitation. In addition, the cell pack generates current of a high density without a separate cooling device.